Amendments to the Claims:

Claims 1 – 96 (Cancelled)

97. (Currently Amended) An optoelectronic device, comprising:

a substrate having a first surface; and

at least one optical interconnect formed on the first surface of the first ~~flexible~~ substrate comprising a sol-gel based material including ~~and~~ an active region defined in the sol-gel based material;

98. (Previously Presented) The optoelectronic device of Claim 97, wherein the active region comprises rare earth ions.

99. (Previously Presented) The optoelectronic device of Claim 98, wherein the rare earth ions have transition lines in the about 0.2 micron to about 3.0 micron spectrum when illuminated by said at least one optical source.

100. (Previously Presented) The optoelectronic device of Claim 98, wherein the rare earth ions have transition lines in the about 1.5 micron region when illuminated by said at least one optical source.

101. (Previously Presented) The optoelectronic device of Claim 98, wherein the rare earth ions comprise a rare earth ion chosen from the group consisting of erbium, ytterbium and neodymium ions.

102. (Previously Presented) The optoelectronic device of Claim 98, wherein the rare earth ions further comprise erbium ions and ytterbium ions.

103. (Previously Presented) The optoelectronic device of Claim 97, wherein the sol-gel based material further comprises at least one electro-optic organic component.

104. (Previously Presented) The optoelectronic device of Claim 97, wherein the active region is capable of being optically side-pumped.

105. (Previously Presented) The optoelectronic device of Claim 97, further comprising at least one optical source for optically pumping the active region.

106. (Previously Presented) The optoelectronic device of Claim 105, wherein the at least one optical source is chosen from the group consisting of at least one vertical cavity surface emitting laser (VCSEL), at least one fiber laser, at least one waveguide laser and at least one semiconductor laser.

107. (Previously Presented) The optoelectronic device of Claim 105, wherein the at least one optical source is used to side-pump the active region of the optical interconnect.

108. (Previously Presented) The optoelectronic device of Claim 105, further comprising an optical detector that is in optical communication with the optical interconnect for detecting an optical signal within the optical interconnect.

109. (Previously Presented) The optoelectronic device of Claim 108, wherein the optical detector comprises a sol-gel based material.

110. (Previously Presented) The optoelectronic device of Claim 97, wherein the at least one optical interconnect further comprises grating structures formed on the at least one optical interconnect.

111. (Previously Presented) The optoelectronic device of Claim 110, wherein the grating structures have a fixed periodicity.

112. (Previously Presented) The optoelectronic device of Claim 110, wherein the grating structures have a chirped periodicity.

113. (Previously Presented) The optoelectronic device of Claim 97, wherein the at least one optical interconnect further comprises prism structures formed on the at least one optical interconnect.

114. (Previously Presented) The optoelectronic device of Claim 97, wherein the at least one optical interconnect further comprises a plurality of optical interconnects disposed in a predetermined pattern on the first surface of the substrate.

115. (Previously Presented) The optoelectronic device of Claim 114, wherein the plurality of optoelectronic interconnects are point-to-point waveguides.

116. (Previously Presented) The optoelectronic device of Claim 114, wherein the plurality of optoelectronic interconnects are point-to-multipoint waveguides.

117. (Previously Presented) The optoelectronic device of Claim 114, wherein the plurality of optoelectronic interconnects are point-to-point waveguides and point-to-multipoint waveguides.

Claims 118 – 132 (Cancelled)

133. (New) The optoelectronic device of Claim 97, wherein the active region comprises rare earth ions surrounded by a tris (8-hydroxyquinoline) molecule.